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ABSTRACT

This exploratory study evaluated the effects of using word processors to aid fourth- and fifth-graders in developing writing skills. The study focused on the Developmental Writing Program of the Hillsborough County (Florida) School District. A pre-study assessment indicated that, although students wrote well, they were reluctant to revise and edit their compositions. Word processing technology was used as a means of motivating and easing revision. Three fifth-grade and three fourth-grade teachers and their classes were included in the treatment group; the treatment group was matched with a control group who did not use word processors in association with writing instruction. A total of 204 students in 12 classes and 12 teachers constituted the study sample. Both teachers and students received training in the use of word processors. Formative evaluation results suggest that the compositions of students in the treatment group improved more than those in the control group. An analysis of students' composition revision characteristics indicates that students who used word processors made more revisions and that their revisions were more meaningful than those of students who did not use word processors. Teachers were also strongly influenced by the innovative program. One data table is included. (TJH)

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Evaluating the Use of Word Processors in Teaching Writing Composition

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ABSTRACT. This exploratory study evaluated the effects of using word processors to aid fourth and fifth grade students in developing writing skills. Results suggest that the compositions of students who used word processors improved more than those of students who did not. An analysis of students' composition revision characteristics indicates that students who used word processors made more revisions and that their revisions were more meaningful than those of students who did not use word processors.

The Developmental Writing Program (DWP) in Hillsborough County School District is designed to teach students to write effectively. Early evaluation of compositions written by students in the program indicated that the writing skills of students in the program surpassed those of students in other writing programs in the district. A common problem, however, surfaced: students were reluctant to revise their texts (Nielsen & Turner, 1984; Turner, 1984).

This problem is not unique to Hillsborough County Schools. Shaugnessy (1977) reports that most inexperienced writers compose single drafts which they consider to be "right" the first time. Previous research indicates that students organize their ideas, telling what they know rather than refining their understanding or attempting to produce a particular effect on an audience. Except for corrections in spelling and punctuation, students rarely modify their texts (Emig, 1971; Kane, 1983; Kurth & Stromberg, 1985). Revised versions tend to be only a neater, more legible copy of the first draft.

Sudol (1982) states that disciplined thinking and writing about a

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subject requires careful analysis of the situation, purpose, and audience. He believes that students who perceive revising to be merely rewriting the same work, or recopying work many times, will not learn to discover and shape their meanings or to revise their work for effective message communication. Marder (1982) and Murray (1978), however, emphasize that only through revising or reformulating early drafts can writers discover and shape their meanings. Schwartz (1982) further argues that the willingness to compose in many drafts is the key to successful writing.

To address this wide-spread problem, the Hillsborough County School District decided to use word processing technology in the DWP as a motivational and efficient technique to encourage their students to edit and revise. Using word processing as an aid could potentially remove students' resistance to editing that stems from the tedium of hand-copying and the difficulty of making major text changes that require the reorganization of a paragraph or an alternative sequence for existing paragraphs.

Recent literature suggests that students who use word processors while composing write more, revise more, and improve the quality of their compositions (Daiute, 1983, 1985; Kurth & Stromberg, 1985; Papert, 1980). Many writers and researchers have called attention to the merits of word processing technology which can facilitate the production and revision of printed materials. They propose that word processors' capabilities for editing and moving written text might help students revise more readily and proficiently (Daiute, 1983, 1985; Hennings, 1981; Schwartz, 1982).

These authors further suggest that computer tools can help students revise by reducing the frustration of recopying, by facilitating the reading of text during the writing stages, and by producing multiple drafts of compositions for easy sharing with teachers and peers during the writing process. Papert (1980) and Kurth and Stromberg (1985) further note that students who use word processors write more and become more intensely involved with their compositions.

Procedures

Hillsborough County School District approved the implementation of a pilot Developmental Writing Project that included the use of word processing technology. Following the approval of the proposal, interviews were conducted with principals in the district in order to find schools equipped with a computer laboratory and teachers who were both willing to learn to use computers and word processors and to incorporate this technology in the program.

Sample

Five schools that met the criteria for the computer laboratory were located. From these schools, three fifth grade and three fourth grade teachers were selected, and these teachers and their respective classes constituted the treatment group in the study. Each of these classes was matched to a similar class group where writing composition was taught without the aid of word processors. The 204 students in these twelve classes and the twelve teachers constituted the sample for the study.

Training

The technology of the word processors meant that both teachers and students in the treatment group would need training in the use of the word processors. The six teachers in the treatment group initially received two days of inservice training where they learned to use the word processors. Three additional inservice days were used to help teachers adopt and modify their instructional practices to incorporate the new technology and to identify and evaluate instructional materials for use in the new program.

Teachers also learned to instruct their pupils in using the word processors. Students learned keyboarding skills following procedures recommended by Levine (1985) and word processing skills using guidelines suggested by Harris (1982).

Following this technological training for the treatment groups, all teachers were observed bimonthly and provided with support and assistance in applying their newly acquired skills. The new program ran through the school year from fall to spring.

Program Evaluation

Formative evaluation strategies were selected to gather information for decision making and program revision during its initial year of operation. Procedures were designed to gather information in the following areas:

1. Were initial teacher training and bimonthly observation and support sessions effective in helping teachers initiate and maintain the instructional program as intended?
2. What effect did the program appear to have on the number and type of text revisions made by pupils?
3. Was the program effective in helping students improve their

writing skills?

Procedures

To gather information on teachers concerns about the new program, the following procedures were used: (1) the open-ended Stages of Concern Questionnaire (SOCQ) adapted from the Concerns Based Adoption Model (Hall & Loucks, 1978) was administered to teachers prior to the initial inservice sessions and again in June, (2) bimonthly classroom observations were made, and (3) teacher interviews were conducted in June using the Levels of Use (LoU) form (Hall & Loucks, 1978). Information gathered using these questionnaires, observations, and interviews was analyzed and shared with teachers and program coordinators.

Related to students' writing performance, the frequency and nature of editing changes made by students in the treatment and comparison groups were analyzed, and the overall writing performance of all students in the program was measured and analyzed. To study the question of text changes, eight students were chosen based on teachers' recommendations. Four students who used word processors and four students who did not were studied. Each group of four students consisted of one boy and one girl from the fourth and fifth grades.

Each of these eight students was observed in the classroom monthly during March, April, and May as he or she composed, making a total of 24 observations. Additionally, a rough draft and a final copy of each of the three compositions written during the observations were collected, making a total of 48 writing samples or 24 sets.

To determine the frequency and complexity of revisions made by each student, these writing samples were analyzed following the recommendations of Faigley and Witte (1981) . Faigley and Witte recommend that revision changes be classified as either surface or meaning changes. Surface changes include minor modifications such as spelling and punctuation revisions. Meaning changes include more in-depth revisions such as sentence expansion, paragraph expansion, and reorganization of ideas in a sentence or paragraph in order to improve the content and clarify the meaning. The nature and frequency of all changes were tallied for each of the eight students in the treatment and comparison groups.

In order to study improvements in students' overall writing performance, a preprogram and a postprogram writing sample was collected for all 204 students in the treatment and comparison groups. Each writing sample was holistically scored on a scale of 1 to 4, with 1

constituting the low end of the scale. Two independent raters scored each composition, and inter-rater score agreement was 97 percent. Treatment and control group scores were compared using a partial hierarchical analysis of variance with two between-groups and one within-subjects variables.

According to researchers in the field, teachers' effective use of a program is associated with significant differences in student performance between treatment and comparison groups (Anderson, Evertson & Brophy, 1979; Gage, 1984; Hall, 1979). Nevertheless, Hall (1979) cautioned that it is unreasonable to anticipate significant differences between treatment and comparison groups during the first cycle of use since program implementation is unstable during the first cycle. Because of the anticipated instability in implementing the new technology in this pilot program, a significance level of .10 was used to spotlight potentially important differences between groups (Borg & Gall, 1983).

Results

Teachers' Perceptions

Teachers were strongly influenced by the innovative program. Results of the Levels of Use (LoU) Interview indicated that teacher use of the innovative program was at a Routine Level Of Use, meaning that their program implementation was comfortable and stabilized with few, if any, changes being made in its current use. This high Level of Use contrasts with other first year innovative programs. According to Hall and Loucks (1978) only 30 to 40 percent of all teachers attain this Level of Use even after three cycles of program implementation.

The results of the second SOCQ, which was administered to teachers in June, suggested that all teachers were: (1) attentive to the impact of the innovation on the composing process of their students and (2) attentive to what changes might be made to increase student performance. Teachers' concerns had shifted from personal and task-related concerns observed in the fall term. In June, they were instead concerned about scheduling additional laboratory time, refining methods and techniques to use word processing technology to help students revise and edit more proficiently, and continuing the program the following school year. These results contrasted with other first year implementation programs which showed only slight differences in the Stages of Concern variable (Fuller & Borich, 1974; McGiffin, 1983).

Teacher use of the program was also characterized as enthusiastic and comfortable. Staff enthusiasm and daily application of the program

were evident to visitors and observers who remarked on the unfailingly happy, busy, collaborative climate of the computer laboratories. These informal observations possibly strengthen the findings concerning teacher utilization of the program and their stages of concern.

Students' Text Changes

The text revisions made by four students in the program and four students in the comparison group revealed differences in performance (See Table 1). To determine the complexity of the revision operations, the taxonomy developed by Faigley and Witte (1981) was used to categorize the revision changes. The results indicated that the total number of revisions for the two fourth and the two fifth graders using word processors were 97 and 145, respectively; the total number of revisions for the two fourth and the two fifth graders not using word processors were 14 and 29, respectively.

The data further revealed that the four students using word processors appeared to make more complex revisions than the four students not using word processors. Students using word processors moved beyond surface-related changes (i.e., spelling or punctuation changes) to meaning-related changes (i.e., sentence or paragraph expansions or the reorganization of sentences and ideas within a composition) in order to improve the content of their text. In contrast, students not using word processors consistently made surface changes limited to punctuation or spelling or to the substitution of words.

These findings further corroborate the findings on writing quality of Kane (1983) and Kurth and Stromberg (1985). According to these authors, students are more willing to consider revisions due to the ease with which sentences and paragraphs can be expanded or moved using a word processor.

Students' Writing Quality

To determine whether overall writing quality differed between all students in the treatment and in the comparison groups, an analysis of variance with repeated measures was performed. Data were obtained from the holistic scores on two writing samples which were collected on two different occasions (pre- and post- treatment). Examination of the mean scores across groups indicates that students' posttest scores ($\underline{M}$ = 2.61 and $\underline{M}$ = 2.39 for the treatment and comparison groups, respectively) were higher than their pretest scores ($\underline{M}$ = 2.27 for both groups).

To determine whether differences were statistically significant, data

between-groups and one within-subjects variables. Results of the analysis revealed a significant two-way interaction effect for Treatment X Occasion ($F[1,8] = 3.76$, $p < .08$). These results suggest that students who were using word processors improved the quality of their writing more than students who were not using word processors. Using Dunn's post hoc test, the difference between the posttest cell means for treatment and comparison groups met the critical mean difference criteria ($p < .10$).

Table 1 Frequencies of Combined Revision Changes on Three Final Drafts for Four Students Using Word Processors (WP) and Four Students Not Using Word Processors (NWP)

	Surface Changes				Meaning Changes					
	Formal Changes		Meaning-Preserving Changes		Micro-Structure Changes		Macro-Structure Changes		Total Changes	
Group	WP	NWP	WP	NWP	WP	NWP	WP	NWP	WP	NWP
Grade 5										
Female	30	2	20	0	8	1	36	0	94	3
Male	7	13	18	9	18	2	8	2	51	26
Combined	37	15	38	9	26	3	44	2	145	29
Grade 4										
Female	13	0	32	0	9	0	5	0	59	0
Male	25	4	11	5	2	2	0	3	38	14
Combined	38	4	43	5	11	2	5	3	97	14

WP: treatment group using word processors
NWP: comparison group not using word processors

This finding is consistent with the speculations and observations of recent researchers. Word processing technology appeared to facilitate the production and revision of printed materials. Observing whole class groups using word processors, evaluators saw students working in pairs at a terminal, sharing their ideas and thoughts. The computer screen apparently facilitated discussion as well as editing and revising compositions. Students exchanged ideas and viewpoints about the choice of particular words, the arrangement of sentences, and the sequence of ideas. They also explored spelling, the arrangement of words and sentences, and the message for the intended audience.

Discussion

The findings of this pilot program evaluation support the use of word processing technology in developmental writing programs. It appears that the elimination of the recopying penalty enabled students to follow through with revisions that were essential for improving their compositions. More important, the interactive deliberation observed between students composing and revising at a terminal suggests that students will continue to improve as they carefully analyze of their work.

Adding new technology and skills to a program often cause frustration for both teachers and students through initial program cycles, which can cause a reduction in treatment students' skills (Bergman & McLaughlin, 1971). The support for teachers throughout the pilot year possibly enabled students to not only match, but surpass the composition skills of peers who were not required to learn word processing operations. Certainly, the goals of the DWP to teach students to write more clearly and effectively were realized. The additional use of word processing technology, however, provided an efficient and exciting means to encourage students to edit and revise compositions without resistance, for the recopying stage was eliminated.

The positive findings of the study lead administrative personnel to extend the program by including five more schools and teachers within these schools during the subsequent school year.

References

Anderson, L., Evertson, C., & Brophy, J. (1979). An experimental study of effective teaching in first-grade reading groups. Elementary School Journal, 79, 193-223.

Bergman, P., & McLaughlin, M. W. (1975). Federal programs supporting educational change Vol. VIII: Implementing and sustaining innovations. Santa Monica, CA: The Rand Corporation.

Borg, W., & Gall, M. (1983). Educational research: An introduction. New York: Longman, Inc.

Daiute, C. (1983). The computer as stylus and audience. College Composition and Communication, 34, 134-145.

Daiute, C. (1985). Writing and computers. Reading, MA: Addison-Wesley Publishing Co.

Emig, J. (1971). The composing process of twelfth graders. Research Report No. 13. Urbana, IL: National Council of Teachers of English.

Faigley, L., & Witte, S. (1981). Analyzing revision. College Composition and Communication, 400-411.

Fuller, F., & Borich, G. (1974). Concerns of teachers: A developmental conceptualization. American Educational Research Journal, 6, 207-226.

Gage, N. L. (1984). What do we know about teaching effectiveness? Phi Delta Kappan, 87-93.

Glatthorn, A. (1981). Writing in the schools: Improvement through effective leadership. Resont, VA: National Association of Secondary School Principals.

Hall, G. (1979). Using the individual and the innovation as the frame of reference for research on change. Paper presented at the annual meeting of the Australia Association for Research in Education.

Hall, G., & Loucks, S. (1978). A developmental model for determining whether the treatment is actually implemented. American Educational Research Journal, 13, 263-276.

Harris, F. (1982). The Bank Street Writer [Computer Program]. Broadway, NY: Scholastic, Inc.

Hennings, D. G. (1981). Input: Enter the word processing computer. Language Arts, 58, 18-22.

Kane, J. (1983). Computers for Composing. Paper presented at the Annual Meeting of the American Educational Research Association. (ERIC Document Reproduction Service No. Ed 230 978, 1-20).

Kurth, R., & Stromberg, L. (1985). Using word processing in composition instruction. American Reading Forum, 9-12.

Levine, N. (1985). Typing for everyone. New York: Arco Publishing, Inc.

Marder, D. (1982). Revision as discovery and the reduction of entropy. In R. A. Sudol (Ed.) Revising: New essays for teachers of writing. Urbana, IL: National Council of Teachers of English.

McGiffin, G. (1983). Coaching for application: A school-based staff development project. Unpublished doctoral dissertation, University of Massachusetts.

Murray, D. M. (1978). Internal revision: A process of discovery. In C. R. Cooper & L. Odell (Eds.) Research on composing: Points to remember. Urbana, IL: National Council of Teachers of English.

Nielsen, L., & Turner, S. (1984). Teaching writing as a process: Evaluation for district decision-making. Florida Journal of Educational Research, 28, 93-108.

Papert, S. (1980). Mindstorms: Children, computers, and powerful ideas. New York: Basic Books.

Schwartz, M. (1982). Computers and the teaching of writing. Educational Technology, 27-29.

Shaughnessy, M. (1977). Errors and expectations: A guide of basic writing. New York: University Press.

Stromberg, L., & Kurth, R. (1983). Using word processing to teach revision in written composition. Paper presented at the Annual Meeting of the National Reading Conference. (ERIC Document Reproduction Service No. Ed 241 953)

Sudol, R. A. (1982). Revising: New essays for teachers of writing. Urbana, IL: National Council of Teachers of English.

Turner, S. (1984). Developmental writing program annual evaluation report. Tampa, FL: Hillsborough County Schools.

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